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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/663,136	09/16/2003	Frank Liu	18098	3999
26794	7590	12/14/2006	EXAMINER	
TYCO TECHNOLOGY RESOURCES 4550 NEW LINDEN HILL ROAD, SUITE 140 WILMINGTON, DE 19808-2952			LU, JIA	
			ART UNIT	PAPER NUMBER
			2611	

DATE MAILED: 12/14/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No.	Applicant(s)	
	10/663,136	LIU, FRANK	
	Examiner	Art Unit	
	Jia W. Lu	2611	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 08 May 2006.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-35 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-12, 17-27 and 30-33 is/are rejected.
- 7) ☒ Claim(s) 13-16, 28, 29, 34 and 35 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 14 January 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

**DETAILED ACTION**

***Claim Objections***

1. Claim 27 is objected to because of the following informalities: "claim 6" should be "claim 21". Appropriate correction is required.
2. For purposes of examining, claim 27 is hereafter assumed to be dependent on claim 21.

***Claim Rejections - 35 USC § 101***

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

3. Claims 1-5, 17-20 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.
  - a. Claims 1 and 17 fail to transform claimed methods of into tangible and concrete results.
  - b. Claims 2-5, 18-20 are rejected based on rejected base claims.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
  2. Ascertaining the differences between the prior art and the claims at issue.
  3. Resolving the level of ordinary skill in the pertinent art.
  4. Considering objective evidence present in the application indicating obviousness or nonobviousness.
4. Claims 1, 2, 4, 6, 7, 9, 11, 12, 17, 18, 20-22, 24, 26, 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over US application publication 2004/0008793 A1, in view of US 6,324,220 B1.

- a. Regarding claim 1, '793 describes a method of determining a transfer function used for emphasizing a portion of an electromagnetic signal prior to being processed in a processing system comprising the steps of:  
determining a discrete transfer function for said processing system (figure 5, steps 1-2), determining a target transfer function (step 3), such that said target transfer function multiplied by the inverse of said discrete transfer function produces a discrete pre-emphasis transfer function (step 4);

While '793 does not describe transforming any unstable poles and/or zeros in said pre-emphasis transfer function to stable poles and/or zeros, such a feature is well known in the art, for example, see '220 (column 8,

lines 3-50). It would have been obvious to one ordinarily skilled in the art to maintain the stability of the system in '793 in order to provide a more robust and reliable system.

- b. Regarding claim 2, said discrete transfer function is determined using input and output signals (paragraph 0020).
- c. Regarding claim 4, said target transfer function is a low pass FIR filter (paragraph 0021) having a gain of about unity (paragraph 0005) across substantially all of the frequency range of said FIR filter.
- d. Claims 6, 21 read on the limitations of claim 1 above, further, '793 describes regulating said modified signal using a control signal (figure 11, element 23, test signal) containing another characteristic of said input wave to produce an output signal (paragraphs 0030 and 0031).
- e. Regarding claims 11 and 26, said characteristic used to regulate said modified signal includes magnitude (paragraphs 0030 and 0031).
- f. Regarding claims 12 and 27, said step of regulating said modified signal is performed using a plurality of segments (paragraphs 0030 and 0031).
- g. Claim 17 reads on the limitations of claim 1 above.
- h. Claims 7, 18 and 22 read on the limitations of claim 2 above.
- i. Claims 9, 20 and 24 read on the limitations of claim 4 above.

5. Claims 3, 8, 19, and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over US application publication 2004/0008793 A1 and US

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6,324,220 B1 as applied to claims 1, 6, 17, 21 and 30 above, further in view of US 5,687,101.

While '793-'220 do not describe the use of an all-pass filter to accomplish transformation of said unstable poles and/or zeros, such a feature is well known in the art, as shown in '101 (column 5, lines 29-56). It would have been obvious to one ordinarily skilled in the art to stabilize poles and zeros in the system of '793 using an all-pass filter in order provide a lossless transform while maintaining all frequencies.

6. Claims 5, 10, and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over US application publication 2004/0008793 A1 and US 6,324,220 B1 as applied to claims above, further in view of US patent 5386590. While '793-'220 do not describe the processing system to comprise one or more selected from the group consisting of phase modulation, wideband phase modulation, wideband fractional sigma delta modulation, and wideband fractional sigma delta modulation for a code division multiple access signal, it describes DMT modulation. It would have been obvious to one ordinarily skilled in the art to use other kinds of modulation, such as phase modulation in the processing system of '793 (such as in '590, abstract and column 2, lines 54-65) order to provide better noise suppression in transmission.

7. Claims 30-33 are rejected under 35 U.S.C. 103(a) as being unpatentable over US patent 5,420,536, in view of US application publication 2004/0008793 A1 and US 6,324,220 B1.

- a. Regarding claim 30, '536 shows a signal transmitter comprising a baseband processor for receiving a wave and generating a magnitude signal and a phase signal (figure 1c, input), a phase modulator for phase modulating the phase signal (figure 1c, elements 1-2), and an amplifier comprising a plurality of segments using modulated phase signal and magnitude signal (figure 1c, element 6).

While '536 does not describe:

filter for transforming phase signal prior to being modulated in said phase modulator, said filter having a pre-emphasis transfer function based upon determining a discrete transfer function from said modulator transfer function, determining a target transfer function such that said target transfer function multiplied by the inverse of said discrete transfer function produces said pre-emphasis transfer function, and transforming any unstable poles and/or zeros in said pre-emphasis transfer function to stable poles and/or zeros;

such limitations read on the limitations of claim 1, rejected above by '793 and '220. it would have been obvious to one ordinarily skilled in the art to use such a transfer function in the transmitter of '536 in order overcome various signal distortions and delays and achieve a flat pass-band response (paragraph 0004 and 0005).

- b. Claim 31 reads on the limitations of claim 2 above.
- c. Claim 32 reads on the limitations of claim 3 above.
- d. Claim 33 reads on the limitations of claim 4 above.

***Allowable Subject Matter***

8. Claims 13-16, 28, 29, 34, 35 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jia W. Lu whose telephone number is 571-272-6042.

The examiner can normally be reached on Mon- Fri, 8:30AM-4:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chieh M. Fan can be reached on (571)272-3042. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



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Jia Lu  
Examiner

  
CHIEH M. FAN  
SUPERVISORY PATENT EXAMINER